

U.G. 4th Semester Examination - 2024

CHEMISTRY

[HONOURS]

Skill Enhancement Course (SEC)

Course Code : CHEM-H-SEC-T-2(A)&(B)

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all the questions from selected Option.

OPTION-A

CHEM-H-SEC-T-2A

(Pharmaceutical Chemistry)

1. Answer any five questions: 2×5=10
- a) What is meant by broad spectrum drugs? Give an example.
 - b) What is antipyretic agent? Give an example of it and its structure.
 - c) Why should aspirin not be taken on an empty stomach?
 - d) Write the biochemical name of Vitamin B2 and mention its one use.

[Turn Over]

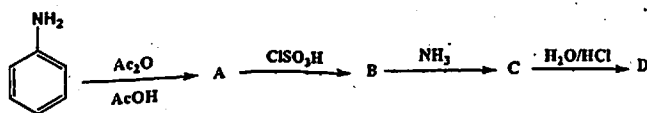
- e) What is antacid? Mention its mode of action in our body.
- f) Give example of an acidic and basic amino acid.
- g) What is AZT? Mention its use.

2. Answer any two questions: $5 \times 2 = 10$

- a) Write down the method of synthesis of paracetamol and mention its uses. Why intake of excess amount of paracetamol is not safe?

$3+1+1$

- b) Identify A, B, C and D in the following reaction schemes:



Mention one use of product D.

$4+1$

- c) Write down the chemical name of dapsone. How would you synthesize it? Mention one use of it.

$1+3+1$

- d) What is a therapeutic agent? What will be the effect of excess intake of vitamin C? How is magnesium bisilicate prepared?

$1+2+2$

3. Answer any two questions: $10 \times 2 = 20$

- a) What is fermentation? Write the differences of aerobic and anaerobic fermentation with examples. How aspirin can be prepared from phenol? Discuss the effect of deficiency of vitamin C on human body.

$2+3+3+2=10$

- b) What are NSAIDs? Give an example of NSAID. Between aspirin and paracetamol which is more toxic to human health and why? How is Sulphacetamide prepared? Indiscriminate use of chloromycetin for minor infection may give rise to fatal anaemia.

$2+1+2+3+2=10$

- c) What is vitamin? Write down the sources of vitamin B12. Name one drug which is used as antiepileptic agent. How could it be prepared?

$2+2+2+4=10$

- d) How will you prepare penicillin and citric acid through the fermentation process? Comment on the optical activity of citric acid. How will you prepare rectified spirit and absolute alcohol from dilute alcohol?

$2+2+2+2+2=10$

OPTION-B

CHEM-H-SEC-T-2B

(Analytical Clinical Biochemistry)

1. Answer any five questions: $2 \times 5 = 10$
- a) Give an example of a proteolytic enzyme and a hydrolase.
 - b) Write the function of ATP.
 - c) What are lipoproteins and what role do they play?
 - d) What are granulocytes?
 - e) What is the composition of normal urine?
 - f) What is a co-enzyme. Give an example.
 - g) Differentiate between simple lipids and compound lipids with an example of each.
 - h) What do you mean by denaturation of proteins? How is it caused?
2. Answer any two questions: $5 \times 2 = 10$
- a) Write short notes on i) Krebs' cycle and ii) Glycolysis. $3 + 2 = 5$
 - b) How can proteins be classified? Explain α -helix and β -pleated structure of proteins. $1 + 2 + 2 = 5$
 - c) Write the structure and biological function of an androgen and an estrogen. $2\frac{1}{2} + 2\frac{1}{2} = 5$

- d) Write a short note on collection and preservation of blood sample. 5
3. Answer any two questions: $10 \times 2 = 20$
- a) Describe i) lock and key model and ii) Induced fit model of enzyme action mechanism. How do enzyme inhibitors function? Give an example of biocatalysis. $(3+3)+2+2$
 - b) Write a brief note on types and functions of derived lipids. What are phosphoglycerides and describe their role in formation of lipid bilayer of cell membranes (fluid mosaic model). Comment briefly on types and functions of peptide hormones. $3+(2+2)+3$
 - c) Describe schematically the process of blood coagulation. What is Pernicious anaemia? Mention one abnormal constituent of urine found in diabetic patients and the normal range of that parameter in blood. What is EDTA and mention its use. $3+2+(1+1)+(1+2)$